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| 23373 7590 03/16/2010<br>SUGHRUE MION, PLLC<br>2100 PENNSYLVANIA AVENUE, N.W.<br>SUITE 800<br>WASHINGTON, DC 20037 |             |                      |                     |                  |
| EXAMINER<br>BOHATY, ANDREW K   |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sughrue@sughrue.com  
PPROCESSING@SUGHRUE.COM  
USPTO@SUGHRUE.COM

### Office Action Summary

**Application No.**

10/573,839

**Applicant(s)**

NAKATANI ET AL.

**Examiner**

Andrew K. Bohaty

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-10 and 15-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 15-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date 2009/12/16
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This Office action is in response to the amendment filed December 16, 2009, which amends claims 1, 4, 6, 7, 8, 10, 15, 16, 18-21, and 23-27 and cancels claims 11-14. Claims 1-10 and 15-27 are pending.

***Response to Amendment***

2. The claim objections of claims 16, 18-21, and 23-27 as set forth in the Office action mailed May 27, 2009 has been overcome due to amendment of the claims.
3. The rejection of claims 1-27 under 35 U.S.C. 112, second paragraph, as set forth in the Office action mailed May 27, 2009 has been overcome due to amendment of the claims or cancellation of the claims.
4. The rejection of claims 1-11, 13, and 15-27 under 35 U.S.C. 102(a) as being anticipated by Doi et al. (WO 2004039859) as set forth in the Office action mailed May 27, 2009 has been overcome due perfection of foreign priority document.
5. The rejection of claims 1, 2, 6, 8-11, 13, 15, and 18-27 rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (US 2003/0168656) as set forth in the Office action mailed May 27, 2009 has been overcome due to cancellation of the claims.
6. The rejection of claims 1-8, 10, 11, 13, and 15-27 under 35 U.S.C. 102(b) as being anticipated by Oguma et al. (EP 1344788) as set forth in the Office action mailed May 27, 2009 has been overcome due to cancellation of the claims or applications arguments.

7. The rejection of claims 12 and 14 under 35 U.S.C. 103(a) as being unpatentable over Doi et al. (WO 2004039859) in view of applicant's admitted prior art as set forth in the Office action mailed May 27, 2009 has been overcome due to amendment of the claims or cancellation of the claims.
8. The rejection of claims 12 and 14 under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 2003/0168656) in view of applicant's admitted prior art as set forth in the Office action mailed May 27, 2009 has been overcome due to cancellation of the claims.
9. The rejection of claims 7, 16, and 17 under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 2003/0168656) in view of applicant's admitted prior art and Oguma et al. (EP 1344788) as set forth in the Office action mailed May 27, 2009 has been overcome due to cancellation of the claims.
10. The rejection of claims 1 and 3-5 under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 2003/0168656) in view of applicant's admitted prior art Marrocco, III et al. (US 2002/0028347) as set forth in the Office action mailed May 27, 2009 has been overcome due to amendment of the claims.
11. The provisional rejection of claims 11-14 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9, 23-26, and 28-30 of copending Application No. 10/532,937 in view of applicant's admitted prior art (hereafter "AAPA") as set forth in the Office action mailed May 27, 2009 is overcome due to cancellation of the claims.

***Response to Arguments***

12. Applicant's arguments, see pages 18 and 19, filed December 16, 2009, with respect to the rejection(s) of claim(s) 1-8, 10, and 15-27 under 35 U.S.C. 102(b) as being anticipated by Oguma et al. (EP 1344788) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Oguma et al. (EP 1344788).

13. Applicant's arguments with respect to the rest of the claims have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. Claims 1-10, and 15-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oguma et al. (EP 1344788) (hereafter "Oguma").

17. With respect to claims 1-5 and 15, Oguma teaches a polymer light emitting material which comprises a polymer compound and a compound that emits light from the triplet state (paragraphs [0056]-[0060], [0140], and [0144]). Oguma teaches that the polymer can have a polystyrene reduced number average molecular weight of  $10^3$  to  $10^8$  (paragraph [0004]). Oguma teaches that the polymer can be composed of a variety of repeating units (paragraph [0056]-[0060] and [0063]-[0070], formula (5), compounds 29-32). Oguma teaches repeating unit 31, which reads on applicant's formula 1 where  $Ar^1$  and  $Ar^2$  are phenyl and  $X^1$  and  $X^2$  are both  $C(R^1)(R^2)$ . Oguma teaches that each be a different substituent (paragraph [0070]). Furthermore, Oguma teaches that any carbon atom can be substituted with a nitrogen atom, sulfur atom, or oxygen (paragraph [0071]). If the one of the two  $C(R^1)(R^2)$  in repeating unit 31 is replaced with an oxygen atom this would read on applicant's formulae 3 and 4, where X is oxygen. Oguma further teaches that the compound that emits light from the triplet state can be a metal compound complex (paragraph [0144]).

18. Oguma does not specifically teach a polymer that has a repeating unit that meets applicant's formula (1) where  $X^1$  and  $X^2$  are different and applicant's formula (4).

19. As described above Oguma does teach that the R groups in repeating unit 31 can be different (paragraph [0070]) and that one of the  $C(R^1)(R^2)$  can be replaced with an oxygen atom (paragraph [0071]). Oguma teaches that these polymers can be used

as a light-emitting material or a charge transporting material and used produce a polymer light-emitting device (paragraph [0003]).

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a polymer that comprising a repeating unit of Oguma's 31, where either the R groups on the two  $C(R^1)(R^2)$  are different, or one of the  $C(R^1)(R^2)$  is replaced with an oxygen atom. The motivation would have been to make a polymer that can be used as a light-emitting material or a charge transporting material and used produce a polymer light-emitting device.

21. With respect to claim 6, Oguma teaches the polymer light emitting material further having a repeating unit represented by the following applicant's formula (5), (6), (7) or (8) (paragraphs [0056]-[0058], formulae (5)-(6)).

22. With respect to claim 7, Oguma teaches the polymer light emitting material where applicant's formula (5) is a repeating unit represented by the following applicant's formula (9), (10), (12), (13) or (14) (paragraphs [0070]-[0072], formulae (7), (8), and (10)-(12)).

23. With respect to claim 8, Oguma teaches the polymer light emitting material where the repeating unit represented by the above defined applicant's formula (5) is a repeating unit represented by applicant's formula (15) (paragraph [0073], formula (13)).

24. With respect to claim 9, Oguma teaches that the polymer comprises a repeating unit of formula (1-1) or (1-2) and other repeating units, which include repeating unit 31 (paragraphs [0055]-[0060]). Oguma teaches that the amount of formula (1-1) or (1-2)

can be from 1% to 100% by mole. This would mean that the amount of the other repeating unit can be from 0% to 99% by mole.

25. Oguma does not specifically teach where the mole percent of the repeating unit 31 in the polymer is 10 % or more by mole.

26. It would have been obvious to one of ordinary skill in the art at the time the invention was made to the amount of repeating unit 31 in the polymer to be 10% to 99% by mole. It would be obvious to optimize the amount of the repeating unit in the polymer to obtain the desired performance.

27. With respect to claim 10, Oguma teaches the polymer light emitting material further including a light emitting material (paragraphs [0056]-[0058] and [0065]-[0069], formula (5), compounds 126-132).

28. With respect to claims 16 and 17, Oguma teaches an ink composition comprising a polymer light emitting material and the ink composition has a viscosity of 1 to 100 mPa·s at 25°C (paragraphs [0150] and [0153]).

29. With respect to claim 18, Oguma teaches a light emitting thin film comprising a polymer light emitting material (paragraph [0134]).

30. With respect to claim 19, Oguma teaches a conductive thin film comprising a polymer light emitting material (paragraph [0133]).

31. With respect to claim 20, Oguma teaches an organic semiconductor thin film comprising a polymer light emitting material (paragraph [0133]).



32. With respect to claim 21, Oguma teaches a polymer light emitting device having a layer comprising a polymer light emitting material between electrodes consisting of an anode and a cathode (paragraph [0136]).
33. With respect to claim 22, Oguma teaches the polymer light emitting device where the light emission layer further comprises a hole transporting material, an electron transporting material or a light-emitting material (paragraph [0139]).
34. With respect to claim 23, Oguma teaches a flat light source comprising a polymer light emitting device (paragraph [0195]).
35. With respect to claim 24, Oguma teaches a segment display comprising a polymer light emitting device (paragraph [0195]).
36. With respect to claim 25, Oguma teaches a dot matrix display comprising a polymer light emitting device (paragraph [0195]).
37. With respect to claim 26, Oguma teaches a liquid crystal display comprising a backlight composed of a polymer light emitting device (paragraph [0195]).
38. With respect to claim 27, Oguma teaches an illumination comprising a polymer light emitting device (paragraph [0197]).
39. Claims 1-10, and 15-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 2003/0168656) (hereafter "Kobayashi") in view of Oguma et al. (EP 1344788) (hereafter "Oguma").
40. With respect to claims 1, 2, and 15, Kobayashi teaches a polymer light emitting material which contains a polymer compound comprising a repeating unit of applicant's

formula (1) and having a polystyrene-reduced number-average molecular weight of  $10^3$  to  $10^8$  (paragraphs [0005]-[0009]), and [0046], repeating unit on page 19 left column last compound before paragraph [0047]). The repeating unit taught by Kobayashi reads on applicant's formula (1) where  $X^1$  and  $X^2$  are both  $\text{Si}(\text{R}^3)(\text{R}^4)$ , and  $\text{R}^3$  and  $\text{R}^4$  for  $X^1$  is methyl and  $\text{R}^3$  and  $\text{R}^4$  for  $X^2$  is phenyl.

41. Kobayashi does not teach where the light emitting composition does not contain a compound that emits light from the triplet state and the compound is a metal complex compound.

42. Oguma teaches that the light emitting polymer can be mixed with a light emitting compound (paragraphs [0139]-[0144]). Oguma further teaches that the light emitting compound can be a metal complex compound that emits light from the triplet state (paragraph [0144]).

43. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the additional light emitting material of Kobayashi with the light emitting material of Oguma to arrive at the claimed invention. The substitution would have been for one known light emitting material that can be mixed with the polymer with another light emitting material that can be mixed with the polymer and lead to the expected result of using metal complex compound in a composition with a polymer compound in a light emitting device. It is well known in the art that materials that emit light from the triplet state have a higher efficiency than fluorescent compounds.

44. With respect to claims 3-5, Kobayashi does not teach repeating units that have a structure that reads on applicant's formula (4).

45. Oguma teaches a polymer light emitting material which comprises a polymer compound and a compound that emits light from the triplet state (paragraphs [0056]-[0060], [0140], and [0144]). Oguma teaches that the polymer can have a polystyrene reduced number average molecular weight of  $10^3$  to  $10^8$  (paragraph [0004]). Oguma teaches that the polymer can be composed of a variety of repeating units (paragraph [0056]-[0060] and [0063]-[0070], formula (5), compounds 29-32). Oguma teaches repeating unit 31, which reads on applicant's formula 1 where  $Ar^1$  and  $Ar^2$  are phenyl and  $X^1$  and  $X^2$  are both  $C(R^1)(R^2)$ . Oguma teaches that each be a different substituent (paragraph [0070]). Furthermore, Oguma teaches that any carbon atom can be substituted with a nitrogen atom, sulfur atom, or oxygen (paragraph [0071]). If the one of the two  $C(R^1)(R^2)$  in repeating unit 31 is replaced with an oxygen atom this would read on applicant's formulae 3 and 4, where X is oxygen. Oguma further teaches that the compound that emits light from the triplet state can be a metal compound complex (paragraph [0144]). Oguma teaches that these polymers can be used as a light-emitting material or a charge transporting material and used produce a polymer light-emitting device (paragraph [0003]).

46. It would have been obvious to one of ordinary skill in the art at the time the invention was to modify the polymer of Kobayashi to include a repeating unit of Oguma's repeating unit 31 where one of the  $C(R^1)(R^2)$  is replace with an oxygen atom. The motivation would have been to make a polymer that can be used as a light-emitting material or a charge transporting material and used produce a polymer light-emitting device.

47. With respect to claim 6, Kobayashi teaches the polymer light emitting material, further having a repeating unit represented by the following formula (7) (paragraph [0050]-[0051], formula (7)).

48. With respect to claims 6 and 7, Kobayashi does not teach the polymer light emitting material containing applicant's formula (5) and where applicant's formula (5) is a repeating unit represented by the following applicant's formulae (9), (10), (12), (13) or (14).

49. Oguma teaches the polymer light emitting material comprising a repeating unit of applicant's formula (5), which is a repeating unit represented by the following applicant's formulae (9), (10), (12), (13) or (14) (paragraphs [0070]-[0072], formulae (7), (8), and (10)-(12)). Oguma teaches that the repeating unit can be used to make a polymer that can be used as a light-emitting material or a charge transporting material and the polymer can be used to produce a polymer light-emitting device.

50. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polymer light emitting material of Kobayashi, wherein applicant's formula (5) is a repeating unit represented by the following applicant's formulae (9), (10), (12), (13) or (14) as taught by Oguma. The motivation would have been to produce a polymer compound usable for a light-emitting material or a charge transporting material and produce a polymer light-emitting device.

51. With respect to claim 8, Kobayashi does not teach a repeating unit to reads on applicant's formula (15).

52. Oguma teaches the polymer light emitting material where the repeating unit represented by the above defined applicant's formula (5) is a repeating unit represented by applicant's formula (15) (paragraph [0073], formula (13)). Oguma teaches that these polymers can be used as a light-emitting material or a charge transporting material and used produce a polymer light-emitting device (paragraph [0003]).

53. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polymer of Kobayashi to include a repeating unit that reads on applicant's formula (15) as taught by Oguma. The motivation would have been to make a polymer that can be used as a light-emitting material or a charge transporting material and used produce a polymer light-emitting device.

54. With respect to claim 9, Kobayashi teaches the polymer light emitting material where the total amount of the repeating unit represented by applicant's formula (1) is 10% by mole or more based on an amount of whole repeating units (paragraph [0049]).

55. With respect to claim 10, Kobayashi teaches the polymer light emitting material further including at least one kind of materials selected from a light emitting material (paragraphs [0050] and [0064]).

56. With respect to claims 16 and 17, Oguma teaches an ink composition having a viscosity of 1 to 100 mPa·s at 25°C comprising a polymer light emitting material (paragraph [0150]) to produce a polymer compound usable for a light-emitting material or a charge transporting material and produce a polymer light-emitting device (paragraph [0003]).

57. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polymer light emitting material of Kobayashi, so the material was an ink composition comprising having a viscosity of 1 to 100 mPa·s at 25°C. The motivation would have been to produce a polymer compound usable for a light-emitting material or a charge transporting material and produce a polymer light-emitting device.

58. With respect to claim 18, Kobayashi teaches a light emitting thin film comprising a polymer light emitting material (paragraph [0139]).

59. With respect to claim 19, Kobayashi teaches a conductive thin film comprising a polymer light emitting material (paragraph [0139]).

60. With respect to claim 20, Kobayashi teaches an organic semiconductor thin film comprising a polymer light emitting material (paragraph [0139]).

61. With respect to claim 21, Kobayashi teaches a polymer light emitting device having a layer comprising a polymer light emitting material between electrodes consisting of an anode and a cathode (paragraph [0140]).

62. With respect to claim 22, Kobayashi teaches the polymer light emitting device where the light emission layer further comprises a hole transporting material, an electron transporting material or a light-emitting material (paragraphs [0149] and [0189]).

63. With respect to claim 23, Kobayashi teaches a flat light source comprising a polymer light emitting device (paragraphs [0219] and [0221]).

64. With respect to claim 24, Kobayashi teaches a segment display comprising a polymer light emitting device (paragraph [0219]).

65. With respect to claim 25, Kobayashi teaches a dot matrix display comprising a polymer light emitting device (paragraph [0219]).

66. With respect to claim 26, Kobayashi teaches a liquid crystal display comprising a backlight composed of a polymer light emitting device (paragraphs [0219] and [0221]).

67. With respect to claim 27, Kobayashi teaches an illumination comprising a polymer light emitting device (paragraphs [0219] and [0221]).

### ***Double Patenting***

68. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thornton*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

69. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

70. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

71. Claims 1-27 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9, 23-26, and 28-30 of copending Application No. 10/532,937 (Doi et al.) (hereafter "Doi") in view of applicant's admitted prior art (hereafter "AAPA"). Although the conflicting claims are not identical, they are not patentably distinct from each other.

72. Regarding claim 1 of the instant application, with respect to claim 1 of Doi, Doi claims a polymer light emitting material which contains a polymer compound comprising a repeating unit of the following formula (1) and having a polystyrene-reduced number-average molecular weight of  $10^3$  to  $10^8$ , wherein  $Ar^1$  and  $Ar^2$  each independently represent a trivalent aromatic hydrocarbon group or a trivalent heterocyclic group;  $X^1$  and  $X^2$  each independently represent O, S, C(=O), S(=O),  $SO_2$ ,  $C(R^1)(R^2)$ ,  $Si(R^3)(R^4)$ ,  $N(R^5)$ ,  $B(R^6)$ ,  $P(R^7)$  or  $P(=O)(R^8)$ , (wherein  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$  and  $R^8$  each independently represent a hydrogen atom, halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylolefinyl group, carboxyl group, alkoxycarbonyl group, aryloxy carbonyl group, arylalkyloxy carbonyl group, heteroaryloxy carbonyl group or cyano group; ( $R^1$  and  $R^2$ ) or ( $R^3$  and  $R^4$ ) may mutually be connected to form a ring); wherein  $X^1$  and  $X^2$  are not the same excepting the case of S or  $Si(R^3)(R^4)$ ;  $X^1$  and  $Ar^2$  bond to adjacent carbon atoms



in the aromatic ring of Ar<sup>1</sup>, and X<sup>2</sup> and Ar<sup>1</sup> bond to adjacent carbon atoms in the aromatic ring of Ar<sup>2</sup>; wherein Ar<sup>3</sup> and Ar<sup>4</sup> each independently represent a trivalent aromatic hydrocarbon group or a trivalent heterocyclic group; X<sup>3</sup> and X<sup>4</sup> each independently represent N, B, P, C(R<sup>9</sup>) or Si(R<sup>10</sup>), (wherein R<sup>9</sup> and R<sup>10</sup> each independently represent a hydrogen atom, halogen atom, alkyl group, alkyloxy group, alkylthio group, aryl group, aryloxy group, arylthio group, arylalkyl group, arylalkyloxy group, arylalkylthio group, acyl group, acyloxy group, amide group, acid imide group, imine residue, amino group, substituted amino group, substituted silyl group, substituted silyloxy group, substituted silylthio group, substituted silylamino group, monovalent heterocyclic group, heteroaryloxy group, heteroarylthio group, arylalkenyl group, arylolefinyl group, carboxyl group, alkoxy carbonyl group, aryloxy carbonyl group, arylalkyloxy carbonyl group, heteroaryl-oxycarbonyl group or cyano group); X<sup>3</sup> and X<sup>4</sup> are not the same; and X<sup>3</sup> and Ar<sup>4</sup> bond to adjacent carbon atoms in the aromatic ring of Ar<sup>3</sup>, and X<sup>4</sup> and Ar<sup>3</sup> bond to adjacent carbon atoms in the aromatic ring of Ar<sup>4</sup>.

73. Doi does not claim a polymer light emitting material which exhibits light emission from the triplet excited state.

74. In the specification Doi teaches a polymer light emitting material which exhibits light emission from the triplet excited state (paragraphs [0071] and [0079]-[0081]) to produce a new polymer compound having strong light emission strength (paragraph [0003]).

75. Given the teachings of Doi in the specification it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the polymer

complex compound, of Doi, wherein the polymer light emitting material exhibits light emission from the triplet excited state to arrive at the claimed invention. One of ordinary skill in the art would have been motivated to produce a new polymer compound having strong light emission strength.

76. Regarding claim 2 of the instant application, with respect to claim 2 of Doi, claim 2 only differs from claim 2 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 2 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

77. Regarding claim 3 of the instant application, with respect to claim 3 of Doi, claim 3 only differs from claim 3 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 3 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

78. Regarding claim 4 of the instant application, with respect to claim 4 of Doi, claim 4 only differs from claim 4 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 4 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

79. Regarding claim 5 of the instant application, with respect to claim 5 of Doi, claim 5 only differs from claim 5 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 5 of Doi would be

modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

80. Regarding claim 6 of the instant application, with respect to claim 6 of Doi, claim 6 only differs from claim 6 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 6 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

81. Regarding claim 7 of the instant application, with respect to claim 7 of Doi, claim 7 only differs from claim 7 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 7 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

82. Regarding claim 8 of the instant application, with respect to claim 8 of Doi, claim 8 only differs from claim 8 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 8 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

83. Regarding claim 9 of the instant application, with respect to claim 9 of Doi, claim 9 only differs from claim 9 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 9 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

84. Regarding claim 10 of the instant application, with respect to claim 23 of Doi, claim 10 only differs from claim 23 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 23 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

85. Regarding claim 15 of the instant application, with respect to claim 1 of Doi, claim 15 only differs from claim 1 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 1 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

86. Regarding claim 16 of the instant application, with respect to claim 24 of Doi, claim 16 only differs from claim 24 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 24 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

87. Regarding claim 17, Doi does not claim the ink composition according to claim 16 having 1 to 100 mPa·s of viscosity at 25°C.

88. In the specification Doi teaches the ink composition according to claim 16 having 1 to 100 mPa·s of viscosity at 25°C (paragraph [0250]) to produce a new polymer compound having strong light emission strength and a polymer light-emitting device using said polymer compound (paragraph [0003]).

89. Given the teachings of Doi in the specification it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the ink composition, of Doi, wherein the ink composition would have a viscosity of 1 to 100 mPa·s at 25°C to arrive at the claimed invention. One of ordinary skill in the art would have been motivated to produce a new polymer compound having strong light emission strength and a polymer light-emitting device using said polymer compound.

90. Regarding claim 18 of the instant application, with respect to claim 25 of Doi, claim 18 only differs from claim 25 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 25 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

91. Regarding claim 19 of the instant application, with respect to claim 25 of Doi, claim 19 only differs from claim 25 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 25 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

92. Regarding claim 20 of the instant application, with respect to claim 25 of Doi, claim 20 only differs from claim 25 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 25 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

93. Regarding claim 21 of the instant application, with respect to claim 26 of Doi, claim 21 only differs from claim 26 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 26 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

94. Regarding claim 22 of the instant application, with respect to claim 28 of Doi, claim 22 only differs from claim 28 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 28 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

95. Regarding claim 23 of the instant application, with respect to claim 29 of Doi, claim 23 only differs from claim 29 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 29 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

96. Regarding claim 24 of the instant application, with respect to claim 29 of Doi, claim 24 only differs from claim 29 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 29 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

97. Regarding claim 25 of the instant application, with respect to claim 29 of Doi, claim 25 only differs from claim 29 of Doi for the same reasons claim 1 of the instant

application differs from claim 1 of Doi as described above. Therefore, claim 29 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

98. Regarding claim 26 of the instant application, with respect to claim 30 of Doi, claim 26 only differs from claim 30 of Doi for the same reasons claim 1 of the instant application differs from claim 1 of Doi as described above. Therefore, claim 30 of Doi would be modified in the same obvious manner as claim 1 above to arrive at the claimed invention.

99. Regarding claim 27, Doi does not claim an illumination comprising a polymer light emitting device according to any of claims 21 to 22.

100. In the specification Doi teaches an illumination comprising a polymer light emitting device according to any of claims 21 to 22 (paragraphs [0231] and [0295]-[0297]) to produce a new polymer compound having strong light emission strength and a polymer light-emitting device using said polymer compound (paragraph [0003]).

101. Given the teachings of Doi in the specification it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify a polymer light emitting device according to any of claims 21 to 22 to be used an illumination device to arrive at the claimed invention. One of ordinary skill in the art would have been motivated to produce a new polymer compound having strong light emission strength and a polymer light-emitting device using said polymer compound.

102. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Conclusion***

103. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew K. Bohaty whose telephone number is (571)270-1148. The examiner can normally be reached on Monday through Thursday 7:30 am to 5:00 pm EST and every other Friday from 7:30 am to 4 pm EST.

104. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571)272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

105. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. K. B./  
Andrew K. Bohaty  
Patent Examiner, Art Unit 1794

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art  
Unit 1794